No.	Records	Request
1	203	MUNG
2	3320	BEAN
3	91	MUNGBEAN
4	1117	VIGNA
5	812	RADIATA
6	360	MUNG BEAN OR MUNGBEAN OR VIGNA RADIATA
7	16957	PY=2004
* 8	19	#6 and (PY=2004)

Record 1 of 19 - AGRICOLA 1998-2004/09
AU: Rashid,-A.; Harris,-D.; Hollington,-P.A.; Rafiq,-M.
TI: Improving the yield of mungbean (Vigna radiata) in the North West Frontier Province of Pakistan using on-farm seed priming.
SO: Experimental agriculture. 2004 Apr., v. 40, no. 2 p. 233-244.
AB: The effect of 'on-farm' seed priming - soaking seeds in water before surface-drying and sowing them - was tested for mungbean (Vigna radiata) in 15 irrigated on-station trials and four sets of rainfed, paired-plot, farmer-participatory trials over four contrasting years from 1999 to 2002 in the North West Frontier Province of Pakistan. The optimum soaking time was found to be between six and eight hours; eight hours was used in all the trials. Of the 19 trials, priming was significantly better than non-priming in 14 with a mean yield increase of 56%. In the remaining five trials there was no difference between treatments but in no case was priming worse than not priming. In a subset of 11 on-station trials in which management was considered to be optimal, yield declined in a linear fashion as the date of sowing was delayed. The rate of decline of about 30 kg ha-1 d-1 after 1st June was similar for both non-primed and primed crops, although the latter declined from a higher base. Farmers' yields were proportional to rainfall over the four years and the mean increase in grain yield due to priming in the 39 trials was 30%. Benefits from priming were the result of a combination of faster germination and emergence and more vigorous growth and development, leading to better crop stands and bigger, more productive plants. It was concluded that 'on-farm' seed priming is a low-cost, low-risk technology that has the potential to raise mungbean yields substantially thus making it a more attractive crop for farmers.

Record 2 of 19 - AGRICOLA 1998-2004/09
AU: Tartoura,-K.; Da-Rocha,-A.; Youssef,-S.
TI: Synergistic interaction between coumarin 1,2-benzopyrone and indole-3-butyric acid in stimulating adventitious root formation in Vigna radiata (L.) Wilczek cuttings. I. Endogenous free and conjugated IAA and basic isoperoxidases.
SO: Plant growth regulation. 2004 Mar., v. 42, no. 3 p. 253-262.
AB: Cuttings from 7-day-old Vigna radiata seedlings were treated for 24 h with various concentrations of coumarin and/or indole-3-butyric acid (IBA), applied either alone or in combination, in order to stimulate adventitious root formation (ARF). The effects of treatment on endogenous free and conjugated indole-3-acetic acid (IAA), basic peroxidase (basic PER) activity and its isoperoxidases analysis and their relation to ARF were then investigated at the potential rooting sites during the first 96 h after application. Simultaneously, combined treatments acted

synergistically in inducing more adventitious roots in treated cuttings than in those treated with coumarin or IBA individually, as compared with the control. Endogenous free IAA increased transiently in treated cuttings as compared with the control and the maximum increase occurred with the combined treatment. This suggests that coumarin and IBA may act synergistically in increasing the endogenous free IAA level during the induction phase of rooting to initiate more roots. Likewise, higher level of conjugated IAA was also found in treated cuttings than in untreated ones, during the primary events of ARF, with the maximum level occurring in the combined treatment. Comparison of the dynamics of conjugated IAA and activity of basic PERs led to conclusion that the former but not the latter is responsible for downregulation of endogenous IAA levels significantly during the primary events of ARF. A sharp increases in basic PERs occurred during the secondary events of ARF, suggesting their role in root initiation and development rather than root induction.

Record 3 of 19 - AGRICOLA 1998-2004/09

AU: Katiyar,-V.; Goel,-R.

TI: Siderophore mediated plant growth promotion at low temperature by mutant of fluorescent pseudomonad.

SO: Plant growth regulation. 2004 Mar., v. 42, no. 3 p. 239-244.

AB: A cold resistant mutant of Pseudomonas fluorescens ATCC 13525 was developed, which could grow equally well at 25 and 10ÀC and its effect on plant growth promotion under in vitro and in situ conditions was observed. Siderophore estimation revealed it to be a siderophore-overproducing mutant (17-fold increase) when compared to its wild type counterpart. A gnotobiotic root elongation assay indicated that the mutant (CRPF9) promoted growth more than its wild type both at 25 and 10ÀC, indicating its effectiveness at low temperature. Further, root colonization studies showed that CRPF9 was an efficient rhizosphere colonizer, inducing a significant increase in root (35%) and shoot length (28%) of mung bean plants in unsterilized soil system. The persistence and stability of the mutant was evident in rhizospheric soil. A sand culture experiment showed that ferric citrate was better than Fe(OH)3 as an iron source for plant growth, but in the presence of CRPF9 both salts were comparable. This study demonstrates the potential of chemical mutagenesis for improving the plant growth promoting properties of a P. fluorescens strain and its stimulating impact on plant growth promotion at low temperature both under in vitro and in situ conditions.

Record 4 of 19 - AGRICOLA 1998-2004/09

AU: Bernardo,-A.E.N.; Garcia,-R.N.; Adachi,-M.; Angeles,-J.G.C.; Kaga, -A.; Ishimoto,-M.; Utsumi,-S.; Tecson-Mendoza,-E.M.

TI: 8S globulin of mungbean [Vigna radiata (L.) Wilczek]: cloning and characterization of its cDNA isoforms, expression in Escherichia coli, purification, and crystallization of the major recombinant 8S isoform.

SO: Journal of agricultural and food chemistry. 2004 May 5, v. 52, no. 9 p. 2552-2560.

AB: Three isoforms of the cDNA of the major 8S globulin of mungbean, 8Salpha, 8Salpha', and 8Sbeta, were isolated, cloned, and characterized. The cDNA sequences of 8Salpha, 8Salpha', and

8Sbeta had open reading frames of 1362, 1359 or 1362, and 1359 bp, respectively, which code for 454, 453 or 454, and 453 amino acids corresponding to molecular weights of 51 973, 51 627 or 51 758, and 51 779, respectively. Homology in terms of cDNA and amino acid sequences was 91-92% between 8Salpha and 8Salpha', 87% between 8Salpha and 8Sbeta, and 86-88% between 8Salpha' and 8Sbeta. The signal peptide was found to be 1-25, 1-24 or 25, and 1-23 for 8Salpha, 8Salpha', and 8Sbeta, respectively, using the signalP website (Nielsen, H.; Engelbrecht, J.; Brunak, S.; von Heijne, G. Protein Eng. 1997, 10, 1-6). The propeptide was determined to be IVHREN. A single site for glycosylation (N-X-S/T) was observed about 90 amino acids from the C terminus. Homology between mungbean 8S isoforms and other 7-8S proteins ranged from 45 to 68% within members of the legume family and 29 to 34% for crops of different species. The major isoform 8Salpha was expressed in Escherichia coli and purified by successive ammonium sulfate fractionation, hydrophobic interaction, and Mono Q column chromatography. The recombinant 8Salpha, but not the native form, was successfully crystallized producing rhombohedral crystals.

Record 5 of 19 - AGRICOLA 1998-2004/09

AU: Ding,-J.; Jia,-J.; Yang,-L.; Wen,-H.; Zhang,-C.; Liu,-W.; Zhang,-D.

TI: Validation of a rice specific gene, sucrose phosphate synthase, used as the endogenous reference gene for qualitative and real-time quantitative PCR detection of transgenes.

SO: Journal of agricultural and food chemistry. 2004 June 2, v. 52, no. 11 p. 3372-3377.

AB: With the development of transgenic crops, many countries have issued regulations to label the genetically modified organisms (GMOs) and their derived products. Polymerase Chain Reaction (PCR) methods are thought to be reliable and useful techniques for qualitative and quantitative detection of GMOs. These methods generally need to amplify the transgene and compare the amplified result with that of the corresponding reference gene to obtain reliable results. In this article, we reported the development of specific primers and probe for the rice (Oryza sativa) sucrose phosphate synthase (SPS) gene and PCR cycling conditions suitable for the use of this sequence as an endogenous reference gene in both qualitative and quantitative PCR assays. Both methods were assayed with 13 different rice varieties, and identical amplification products were obtained with all of them. No amplification products were observed when DNA samples from other species, such as wheat, maize, barley, tobacco, soybean, rapeseed, tomato, sunflower, carrot, pepper, eggplant, lupine, mung bean, plum, and Arabidopsis thaliana, were used as templates, which demonstrated that this system was specific for rice. In addition, the results of the Southern blot analysis confirmed that the SPS gene was a single copy in the tested rice varieties. In qualitative and quantitative PCR analyses, the detection sensitivities were 0.05 and 0.005 ng of rice genomic DNA, respectively. To test the practical use of this SPS gene as an endogenous reference gene, we have also quantified the beta-glucuronidase (GUS) gene in transgenic rice using this reference gene. These results indicated that the SPS gene was species specific, had one copy number, and had a low heterogeneity among the tested cultivars. Therefore, this gene

could be used as an endogenous reference gene of rice and the optimized PCR systems could be used for practical qualitative and quantitative detection of transgenic rice.

Record 6 of 19 - AGRICOLA 1998-2004/09
AU: Ishii,-T.; Ohnishi-Kameyama,-M.; Ono,-H.
TI: Identification of elongating Wgb-1,4-galactosyltransferase activity in mung bean (Vigna radiata) hypocotyls using 2-aminobenzaminated 1,4-linked Wgb-D-galactooligosaccharides as acceptor substrates.
SO: Planta. 2004 June, v. 219, no. 2 p. 310-318.
AB: Galactosyltransferase (GalT) activity that results in the transfer of galactose (Gal) from UDP-Gal to exogenous (1 to 4)-Wgb-galactooligosaccharides labeled with 2-aminobenzamide (2AB) at their reducing ends was identified in a particulate preparation obtained from 2-day-old mung bean (Vigna radiata L. Wilezek) hypocotyls. The enzymes responsible were shown, by high-performance anion-exchange chromatography and normal-phase liquid chromatography-electrospray ionization mass spectrometry, to transfer up to eight Gals to the non-reducing end of 2AB-labeled galactooligosaccharide. Using Wp1H nuclear magnetic resonance spectroscopy, and Wgb-galactosidase and endo-b-(1 to 4)-galactanase treatments of the enzymatically formed 2AB-labeled galactooligosaccharides, the newly incorporated Gal residues were shown to be Wgb-(1 to 4) linked. Time-course studies indicated that at least two different types of GalT isoform are involved in the elongation of the acceptor substrates. 2AB-labeled galactoheptaose was the most effective acceptor substrate analyzed, although galactooligosaccharides with a degree of polymerization between 4 and 6 were also acceptor substrates. 2AB-labeled penta- and heptasaccharides (RG5 and RG7) generated from rhamnogalacturonan I (RG-I) were not acceptor substrates, suggesting that the GalTs were not capable of adding Gal residues directly to the RG-I backbone. Maximum GalT activity was obtained at pH 6.5 and 20ÀC in the presence of 25 mM Mn2+ and 0.75% (w/v) Triton X-100. The enzyme had an apparent Km of 20 micromolar for 2AB-labeled galactoheptaose and 32 micromolar for UDP-Gal. The characteristics of the enzyme in mung bean microsomal membranes and the usefulness of fluorogenic 2AB-labeled galactooligosaccharides for the assay of GalT are discussed.

Record 7 of 19 - AGRICOLA 1998-2004/09
AU: Shanker,-A.K.; Djanaguiraman,-M.; Sudhagar,-R.; Chandrashekar,-C. N.; Pathmanabhan,-G.
TI: Differential antioxidative response of ascorbate glutathione pathway enzymes and metabolites to chromium speciation stress in green gram (Vigna radiata (L.) R.Wilczek. cv CO 4) roots.
SO: Plant science. 2004 Apr., v. 166, issue 4 p. 1035-1043.

Record 8 of 19 - AGRICOLA 1998-2004/09
AU: Hu,-H.; Churey,-J.J.; Worobo,-R.W.
TI: Heat treatments to enhance the safety of mung bean seeds.
SO: Journal of food protection. 2004 June, v. 67, no. 6 p. 1257-1260.
AB: Salmonella enterica serovars and Escherichia coli O157:H7 have been associated with contaminated seed sprout outbreaks. The majority of these outbreaks have been traced to sprout seeds contaminated with low levels of pathogens. E. coli O157: H7

strains can grow an average of 2.3 log CFU/g over 2 days during seed germination, and Salmonella can achieve an average growth of 3.7 log CFU/g. Therefore, it is important to find an effective method to reduce possible pathogenic bacterial populations on the seeds prior to sprouting. Our objective was to assess the effectiveness of various dry heat treatments on reducing E. coli O157:H7 and Salmonella populations on mung beans intended for sprout production and to determine the effect of these treatments on seed germination. Mung beans were inoculated with five-strain cocktails of E. coli O157:H7 and of Salmonella serovars harboring the green fluorescent protein gene and then air dried overnight. Heat treatments were performed by incubating the seeds at 55ÀC for various periods of time. Heat-treated seeds were then assessed for the efficacy of the heat treatment and the effects of heat treatment on germination rates. After inoculation and drying, 6 log CFU/g E. coli O157:H7 and 4 log CFU/g Salmonella were detected on the seeds. Following heat treatment, pathogenic bacterial populations on the seeds were below detectable levels (< 1 log CFU/g), but the germination rate of the seed was not affected. Thus, the risk of contamination and the presence of pathogens in the finished sprouts were greatly reduced via the seed heat treatment process.

Record 9 of 19 - AGRICOLA 1998-2004/09

AU: Messina,-F.J.

TI: How labile are the egg-laying preferences of seed beetles.

SO: Ecological entomology. 2004 June, v. 29, no. 3 p. 318-326.

AB: 1. Previous studies have produced conflicting results with respect to the genetic lability of host preference in the seed beetle Callosobruchus maculatus. 2. In this study, replicate lines of an Asian population were kept on an ancestral host (mung bean) or switched to a novel host (cowpea). After 40+ generations, lines were assayed for host preference (in choice tests) and host acceptance (under no-choice conditions), and were compared to African lines chronically associated with cowpea. 3. Host preference diverged in the expected direction. When presented a mixture of cowpeas and mung beans, females from the cowpea lines laid a greater fraction of their eggs on cowpea than did females from the mung bean lines. Preference for cowpea was nearly as strong in the cowpea lines as it was in the cowpea-adapted African lines. 4. In contrast, the experimental host shift did not affect long-term host acceptance. African females laid more eggs if given cowpeas than if given mung beans, but realised fecundities in the cowpea and mung bean lines were similar on the two hosts. Females from all lines laid more eggs if they were reared on cowpea than on mung bean, but rearing host had no effect on either relative host acceptance or host preference. 5. Comparisons with earlier studies suggest that the lability of host preference varies among beetle populations, which precludes generalisation at the species level. Because lines were maintained under no-choice conditions, modification of host preference probably occurred via a lower acceptance threshold for the novel host, without a concomitant change in the long-term acceptance of the ancestral host.

Record 10 of 19 - AGRICOLA 1998-2004/09

AU: Hameed,-S.; Robinson,-D.J.

TI: Begomoviruses from mungbeans in Pakistan: epitope profiles, DNA A sequences and phylogenetic relationships.
SO: Archives of virology. 2004 Apr., v. 149, no. 4 p. 809-819.

Record 11 of 19 - AGRICOLA 1998-2004/09
AU: Yang,-S.J.; Jiang,-S.S.; Hsiao,-Y.Y.; Van,-R.C.; Pan,-Y.J.; Pan,-R.L.
TI: Thermoinactivaion analysis of vacuolar H+ -pyrophosphatase.
SO: Biochimica et biophysica acta = International journal of biochemistry, biophysics and molecular biology Bioenergetics. 2004 June 7, v. 1656, issues 2-3 p. 88-95.
AB: Vacuolar H+-translocating pyrophosphatase (H+-PPase; EC 3.6.1.1) catalyzes both the hydrolysis of PPi and the electrogenic translocation of proton from the cytosol to the lumen of the vacuole. Vacuolar H+-PPase, purified from etiolated hypocotyls of mung bean (Vigna radiata L.), is a homodimer with a molecular mass of 145 kDa. To investigate the relationship between structure and function of this H+-translocating enzyme, thermoinactivation analysis was employed. Thermoinactivation studies suggested that vacuolar H+-PPase consists of two distinct states upon heat treatment and exhibited different transition temperatures in the presence and absence of ligands (substrate and inhibitors). Substrate protection of H+-PPase stabilizes enzyme structure by increasing activation energy from 54.9 to 70.2 kJ/mol. We believe that the conformation of this enzyme was altered in the presence of substrate to protect against the thermoinactivation. In contrast, the modification of H+-PPase by inhibitor (fluorescein 5'-isothiocyanate; FITC) augmented the inactivation by heat treatment. The native, substrate-bound, and FITC-labeled vacuolar H+-PPases possess probably distinct conformation and show different modes of susceptibility to thermoinactivation. Our results also indicate that the structure of one subunit of this homodimer exerts long distance effect on the other, suggesting a specific subunit-subunit interaction in vacuolar H+-PPase. A working model was proposed to interpret the relationship of the structure and function of vacuolar H+-PPase.

Record 12 of 19 - AGRICOLA 1998-2004/09
AU: Chen,-J.J.; Chen,-G.H.; Hsu,-H.C.; Li,-S.S.; Chen,-C.S.
TI: Cloning and functional expression of a mungbean defensin VrD1 in Pichia pastoris. [Erratum: 2004 June 30, v. 52, no. 13, p. 4350.].
SO: Journal of agricultural and food chemistry. 2004 Apr. 21, v. 52, no. 8 p. 2256-2261.
AB: It was shown previously that a bacterially expressed mungbean defensin VrCRP exhibited both antifungal and insecticidal activities. To isolate this protein in a large quantity for its characterization, the defensin cDNA was expressed in Pichia pastoris and the recombinant defensin (rVrD1) was purified. The recombinant VrD1 was shown to inhibit the growth of fungi such as Fusarium oxysporum, Pyricularia oryza, Rhizoctonia solani, and Trichophyton rubrum and development of bruchid larva. The protein also inhibits in vitro protein synthesis. These biological activities are similar to that of the bacterially expressed defensin. Functional expression of VrD1 in Pichia pastoris provides a highly feasible system to study the structure-function relationship of VrD1 using the mutagenesis approach.

Record 13 of 19 - AGRICOLA 1998-2004/09

AU: Joo,-S.; Park,-K.Y.; Kim,-W.T.

TI: Light differentially regulates the expression of two members of the auxin-induced 1-aminocyclopropane-1-carboxylate synthase gene family in mung bean (Vigna radiata L.) seedlings.

SO: Planta. 2004 Apr., v. 218, no. 6 p. 976-988.

AB: Auxin induces the expression of the two ethylene-biosynthetic genes VR-ACS6 and VR-ACS7 in etiolated mung bean hypocotyls. However, while it also enhances VR-ACS6 expression in light-grown tissues, it does not up-regulate VR-ACS7 expression in these tissues. Here we show that transfer of 3-day-old etiolated seedlings into light quickly reduced the auxin-induced expression of both genes. However, while auxin-induced VR-ACS6 expression recovered after 24 h of light, VR-ACS7 transcription continued to reduce and was almost completely absent at 36 h. Thus, light differentially modulates the expression of the auxin-inducible VR-ACS genes. In hormone-treated etiolated seedlings, VR-ACS7 was primarily induced in the rapidly elongating zones of hypocotyl and epicotyl tissues, while auxin-induced VR-ACS6 mRNA was evenly distributed throughout the whole seedling. VR-ACS7 promoter-driven beta-glucuronidase (GUS) activity in auxin-treated etiolated transgenic Arabidopsis seedlings was observed in the highly elongating zones of the hypocotyl. During de-etiolation, the GUS activity gradually declined to become confined to the uppermost region of hypocotyls. In situ mRNA localization studies showed that in etiolated mung bean hypocotyls, the auxin-dependent VR-ACS7 transcript was predominantly present in the epidermis, which is the driving site for auxin-mediated elongation. Thus, it appears that the modulation by light of auxin-induced VR-ACS7 expression may correlate closely with the elongation growth response in early seedling development.

Record 14 of 19 - AGRICOLA 1998-2004/09

AU: Thomas; Robertson,-M.J.; Fukai,-S.; Peoples,-M.B.

TI: The effect of timing and severity of water deficit on growth, development, yield accumulation and nitrogen fixation of mungbean .

SO: Field crops research. 2004 Feb. 20, v. 86, issue 1 p. 67-80.

Record 15 of 19 - AGRICOLA 1998-2004/09

AU: Konishi,-T.; Ohmiya,-Y.; Hayashi,-T.

TI: Evidence that sucrose loaded into the phloem of a poplar leaf is used directly by sucrose synthase associated with various (beta)-glucan synthases in the stem.

SO: Plant physiology. 2004 Mar., v. 134, no. 3 p. 1146-1152.

AB: Sucrose (Suc) synthase (SuSy) is believed to function in channeling UDP-Glc from Suc to various (beta)-glucan synthases. We produced transgenic poplars (Populus alba) overexpressing a mutant form (S11E) of mung bean (Vigna radiata) SuSy, which appeared in part in the microsomal membranes of the stems. Expression of SuSy in these membranes enhanced the incorporation of radioactive Suc into cellulose, together with the metabolic recycling of fructose (Fru), when dual-labeled Suc was fed directly into the phloem of the leaf. This overexpression also enhanced the direct incorporation of the glucosyl moiety of Suc

into the glucan backbone of xyloglucan and increased recycling of Fru, although the Fru recycling system for cellulose synthesis at the plasma membrane might differ from that for xyloglucan synthesis in the Golgi network. These findings suggest that some of the Suc loaded into the phloem of a poplar leaf is used directly by SuSys associated with xyloglucan and cellulose synthases in the stem. This may be a key function of SuSy because the high-energy bond between the Glc and Fru moieties of Suc is conserved and used for polysaccharide syntheses in this sink tissue.

Record 16 of 19 - AGRICOLA 1998-2004/09

AU: Hsiao,-Y.Y.; Van,-R.C.; Hung,-S.H.; Lin,-H.H.; Pan,-R.L.

TI: Roles of histidine residues in plant vacuolar H+-pyrophosphatase.

SO: Biochimica et biophysica acta = International journal of biochemistry, biophysics and molecular biology Bioenergetics. 2004 Feb. 15, v. 1608, no. 2-3 p. 190-199.

AB: Vacuolar proton pumping pyrophosphatase (H+-PPase; EC 3.6.1.1) plays a pivotal role in electrogenic translocation of protons from cytosol to the vacuolar lumen at the expense of PPi hydrolysis. Alignment analysis on amino acid sequence demonstrates that vacuolar H+-PPase of mung bean contains six highly conserved histidine residues. Previous evidence indicated possible involvement of histidine residue(s) in enzymatic activity and H+-translocation of vacuolar H+-PPase as determined by using histidine specific modifier, diethylpyrocarbonate [J. Protein Chem. 21 (2002) 51]. In this study, we further attempted to identify the roles of histidine residues in mung bean vacuolar H+-PPase by site-directed mutagenesis. A line of mutants with histidine residues singly replaced by alanine was constructed, over-expressed in Saccharomyces cerevisiae, and then used to determine their enzymatic activities and proton translocations. Among the mutants scrutinized, only the mutation of H716 significantly decreased the enzymatic activity, the proton transport, and the coupling ratio of vacuolar H+-PPase. The enzymatic activity of H716A is relatively resistant to inhibition by diethylpyrocarbonate as compared to wild-type and other mutants, indicating that H716 is probably the target residue for the attack by this modifier. The mutation at H716 of V-PPase shifted the optimum pH value but not the T1/2 (pretreatment temperature at which half enzymatic activity is observed) for PPi hydrolytic activity. Mutation of histidine residues obviously induced conformational changes of vacuolar H+-PPase as determined by immunoblotting analysis after limited trypsin digestion. Furthermore, mutation of these histidine residues modified the inhibitory effects of F- and Na+, but not that of Ca2+. Single substitution of H704, H716 and H758 by alanine partially released the effect of K+ stimulation, indicating possible location of K+ binding in the vicinity of domains surrounding these residues.

Record 17 of 19 - AGRICOLA 1998-2004/09

AU: Devi,-P.; Radha,-P.; Sitamahalakshmi,-L.; Syamala,-D.; Kumar,-S.M.

TI: Plant regeneration via somatic embryogenesis in mung bean [Vigna radiata (L.) Wilczek].

SO: Scientia horticulturae. 2004 Jan. 2, v. 99, no. 1 p. 1-8.

Record 18 of 19 - AGRICOLA 1998-2004/09

AU: Dhir,-B.; Sharmila,-P.; Pardha-Saradhi,-P.
TI: Hydrophytes lack potential to exhibit cadmium stress induced enhancement in lipid peroxidation and accumulation of proline.
SO: Aquatic toxicology. 2004 Feb. 10, v. 66, no. 2 p. 141-147.
AB: Investigations were carried out to evaluate if hydrophytes (viz. Ceratophyllum, Wolffia, and Hydrilla) can be used as markers to assess the level of heavy metal pollution in aquatic bodies. The potential of these hydrophytes for lipid peroxidation and accumulation of proline in response to cadmium (Cd2+) pollution was studied. Hydrophytes were raised in artificial pond water (APW) supplemented with various levels of Cd2+. Interestingly, unlike mesophytes none of the hydrophytes showed ability to accumulate proline. Infact, in response to Cd2+ pollution hydrophytes exhibited a decline in proline levels in comparison to controls but mesophytes (viz. Brassica juncea, Vigna radiata and Triticum aestivum) showed progressive increase in the level of proline with increase in the extent of Cd2+ pollution. Mesophytes showed six to nine-fold increase in the level of proline in response to 1 mM Cd2+. The potential of the above hydrophytes for lipid peroxidation was also low under Cd2+ stress. In contrast, as expected a significant enhancement in the lipid peroxidation was observed in all three mesophytes in response to their exposure to Cd2+. About two-fold increase in production of malondialdehyde (a cytotoxic product of lipid peroxidation) was recorded in mesophytes exposed to 1 mM Cd2+. However, a decline in chlorophyll (Chl a and Chl b) levels was recorded in response to Cd2+ pollution both in hydrophytes as well as mesophytes. In summary, hydrophytes neither have potential to accumulate proline nor have ability to accelerate lipid peroxidation under heavy metal stress. This suggests that the adaptive mechanism(s) existing in hydrophytes to tackle heavy metal stress is distinct from that in mesophytes.

Record 19 of 19 - AGRICOLA 1998-2004/09
AU: Sun,-H.; Xu,-J.; Yang,-S.; Liu,-G.; Dai,-S.
TI: Plant uptake of aldicarb from contaminated soil and its enhanced degradation in the rhizosphere.
SO: Chemosphere. 2004 Jan., v. 54, no. 4 p. 569-574.